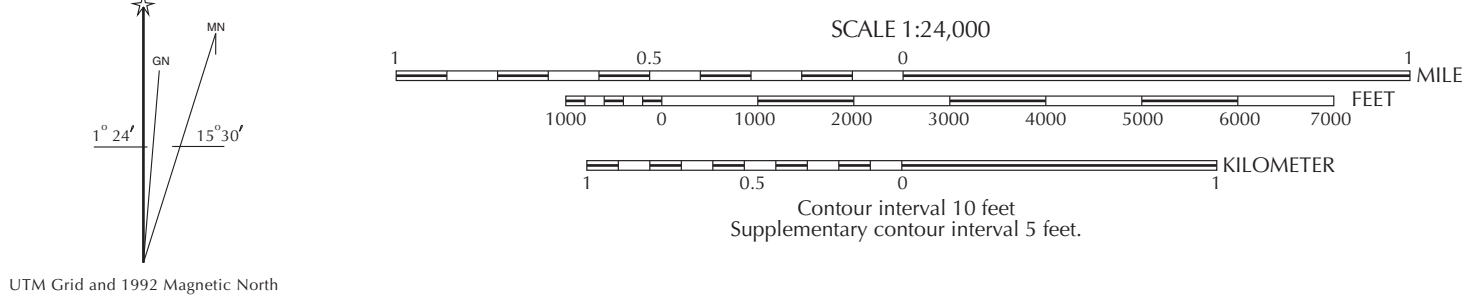
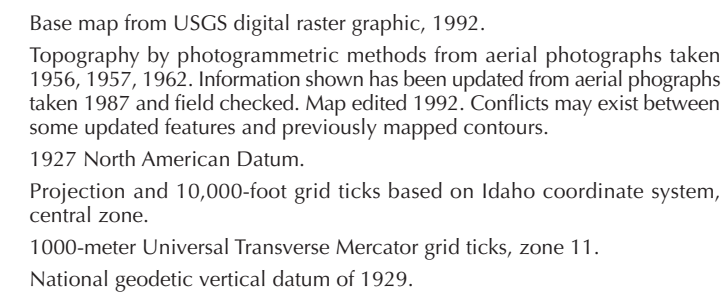


Disclaimer: This Digital Web Map is an informal report and may be revised and formally published at a later time. Its content and format may not conform to agency standards.

2005



Field work conducted 2002-2004.
This geologic map was funded in part by the USGS National Cooperative
Geologic Mapping Program.
Digital cartography by Jesse S. Bird and Jane S. Freed at the Idaho Geological
Survey's Digital Mapping.
Map version 11-29-2005.
PDF map (Acrobat Reader) may be viewed at idahogeology.org.

Artificial Deposits

m

Mass Movement Deposits

Qt

Lacustrine, Alluvial, and Flood Deposits

Qam
Oam

Qas

Qaf

Bonneville Flood Deposits

14,500 years

Qabg

Qabs

Volcanic Units

0.095 Ma

Qwb

Qrb

1.73 Ma

QTstr

4.9 Ma

Tb

Than

Thub

Tbo

Tahr

Sources of age determination:
⁴⁰K/³⁹Ar weighted mean average plateau age, Tausse and others (2004).
K-Ar age determination, Armstrong and others (1975).

The geologic map of the Twin Falls 7.5' quadrangle identifies both the bedrock and surficial geologic units. It shows the geographic distribution of rock types at the surface and in the shallow subsurface. Basalt is the principal rock type in the area. South of the Snake River Canyon the basalt surface is mantled with wind-blown silt that forms the soils that are cultivated. The geologic units in the area control soil development, slope stability, groundwater movement and recharge, and geotechnical factors important to design and waste management. Springs in the area include irrigated agriculture, rural and urban residential development, industrial and commercial enterprises, and dairy farms with confined animal feeding operations. The Snake River Plain aquifer underlies the area and discharges to the west of the Twin Falls 7.5' quadrangle as springs in the Snake River Canyon.

Previous geologic studies include work by Gillemer and Schiappa (1994, 2001) who did an investigation of western Jerome County to assess groundwater vulnerability to contamination. Geology of the area south of the Snake River was compiled from previous mapping by Bonnichsen and Godchaux (1995). The geology of the Snake River valley was mapped by Gillemer and Schiappa (1994) and was also reviewed. Field checking of these maps was combined with new field investigations in 2002–2004 of both bedrock and surficial geology. Exposures of the geology were examined and selectively sampled. Aerial photographs were studied to aid in identifying boundaries between map units through photographic mapping of landforms. In most areas maps-unit boundaries were not apparent. The geologic map was compiled from field exposures and poorly defined landforms present greater mapping precision. The information depicted at this scale furnishes a useful overview of the area's geology but is not a substitute for site-specific evaluations.

[illegible]

ARTIFICIAL DEPOSITS

ALLUVIAL DEPOSITS

Qam Alluvium of mainstems (Holocene)—Channel and flood-plain deposits of the Snake River. Primarily stratified sandy silt and silty sand of bars and islands. Gravelly where channel is shallow and formed directly in basalt. Typically 1-10 feet thick.

Older alluvium of mainstreams (Holocene)—Channel and flood-plain deposits of the Snake River that form a terrace 20 feet above river level. Primarily stratified sand and gravel overlain by silt and sand. Grades and interfingers laterally into colluvium and talus at the base of canyon walls.

Qas **Alluvium of side-streams (Holocene)**—Channel and flood-plain deposits of Rock Creek. Primarily stratified silt, sand and gravel.

Qal Alluvial-fan deposits (Holocene)—Primarily stratified sand and silt that form small fans at the base of canyon walls. Thickness varies, but typically ranges 5-30 feet.

Bonneville Flood Deposits

Sand and gravel in giant flood bars (Pleistocene)—Boulders, cobbles, and pebbles of basalt in a matrix of basaltic sand. Forms giant expansion bars with large-scale crossbeds, and eddy deposits in which gravel sizes are smaller (O'Connor,). Similar to Melon Gravel (Malde and Powers, 1962; Malde and others, 1963; and Covington and Weaver, 1990), but restricted to Bonneville Flood constructional forms and deposits.

Scabland flood pathways (Pleistocene)—Flood-scoured basal surface. Character of scoured surface ranges from areas of original basal morphology stripped of pre-flood soils, to areas where the original basal surface has been plucked, gouged, and molded. Includes thin and discontinuous sheets and bars of flood sand and gravel that are not mapped at this scale. Some areas include pavements or strings of boulders transported by flood traction forces or that are lags from erosion by lower-energy regime during late stages of the flood.

MASS MOVEMENT DEPOSIT

Qr **Talus (Holocene)**—Angular pebble-, cobble-, and boulder-sized fragments of basalt that have broken off nearby vertical rock walls and accumulated below. Deposits are characterized by a steeply sloping surface that is at or near the angle of repose. Talus is not mapped where it partially covers basalt. Talus includes small deposits of eolian or water-reworked fine sand that typically occur at the toes of the talus slope.

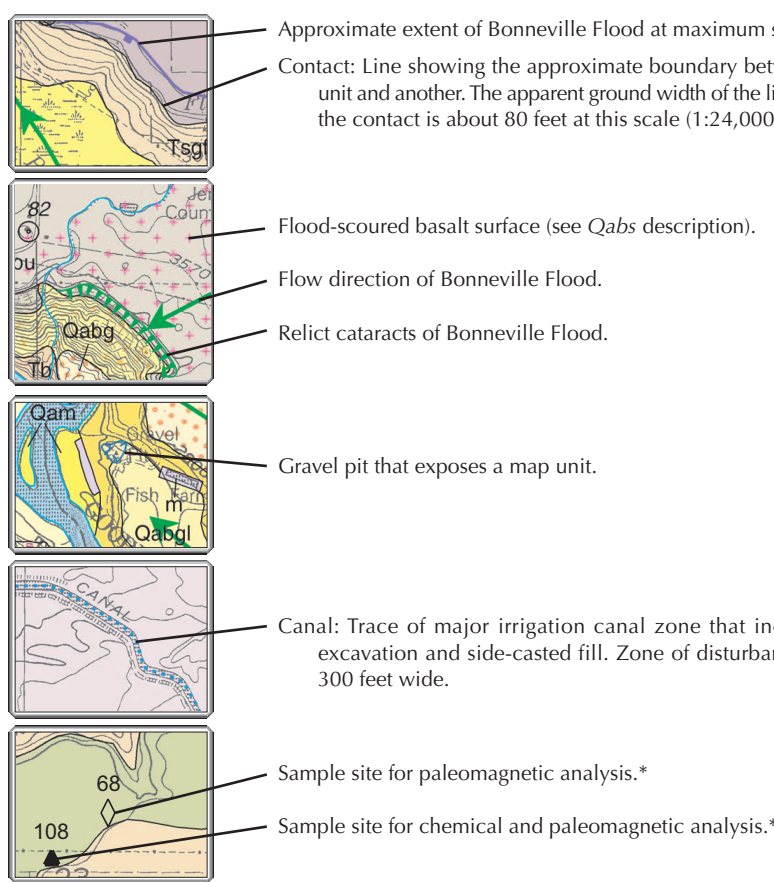
BASALT UNITS

The surface geology of the Snake River Plain north of the Snake River is primarily Pleistocene basalt flows of the Snake River Group. On the Twin Falls 7.5' quadrangle, the Pleistocene basalt flows primarily originated from shield volcanoes to the northeast. Each volcano probably extruded numerous lava flows or flow lobes, although individual flows cannot easily be mapped because the surfaces are subdued by surficial deposits. Nearly all of the

RHYOLITE UNIT

Tshrr **Rhyolite of Shoshone Falls (Miocene)**—Light gray to pinkish gray porphyritic rhyolite with a black porphyritic vitrophyre 10-15 feet thick at the top. Remanent magnetic polarity is normal as determined in the field and through laboratory analysis. Distribution is restricted to the bottom of the Snake River canyon. Best exposed at Shoshone Falls where its age may be about 6.25 Ma (B. Bonnichsen, written commun., 2005).

SYMBOLS



*Data available at Idaho Geological Survey, igs@uidaho.edu.

REFERENCES

- Mares, Dal, 2003, Soil survey of Jerome County and Part of Twin Falls County, Idaho. U.S. Department of Agriculture, Natural Resources Conservation Service, N936, 391 pages, 67 sheets.
- Ammon, H.E., and H.E. Maize, 1976, H.E. Maide, 1975, K-r dating. Quarterly and Neogenic volcanic rocks of the Snake River Flats, Idaho. *American Journal of Science*, v. 275, p. 225-251.
- Baldwin, Mark, 1925, Soil survey of the Twin Falls area, Idaho. U.S. Department of Agriculture, Bureau of Soil Conservation, Sheets—Field Operations of the Bureau of Soils, 1921, 1:367,194, 1 plate.
- Bonnichsen, Bill, and M.M. Gokorski, 1995, Preliminary geologic map and cross-section of the Twin Falls quadrangle, Twin Falls and Jerome counties, Idaho. U.S. Geological Survey Miscellaneous Investigations Series Map I-254,000, 1:250,000 scale, 1 sheet.
- Covington, H.R., and J.N. Weaver, 1990, Geologic map and profiles of the north wall of the Snake River Canyon, Jerome, Flieer, Twin Falls, and Kimberly quadrangles, Idaho. U.S. Geological Survey Miscellaneous Investigations Series Map I-24,000, 1:250,000 scale, 1 sheet.
- Gilleman, V.S., and T.A. Schiappa, 1994, Geology and hydrology of western Jerome County, Idaho: unpublished Idaho Geological Survey contract report, 49 pages, 1 plate.
- Gilleman, V.S., and T.A. Schiappa, 2001, Geology and hydrogeology of western Jerome County, Idaho. Idaho Geological Survey Staff Report 01-00, 47 pages, 1 plate.
- Gruhn, Ruth, 1961, Archeology of Wilson Butte Cave, 274 p.
- Nash, J.P., 1961, Archeology of Wilson Butte Cave, 274 p.
- Maide, H.E., H.A. Powers, and C.H. Marshall, 1963, Reconnaissance geologic map of west-central Snake River Flats, Idaho. U.S. Geological Survey Miscellaneous Geologic Investigations Map I-373.
- Maide, H.E., and H.A. Powers, 1962, Upper Cenozoic stratigraphy of the western Snake River Flats, Idaho. *Geological Society of America Bulletin*, v. 73, p. 1197-1220.
- Matthews, S.H., 2000, Geology of Owanza Butte, Shoshone SE, and Star Lake quadrangles, Snake River Flats, southern Idaho: University of South Carolina M.S. theses, 135 pages.
- O'Connor, J.E., 1995, Hydrology, hydraulics, and geomorphology of the Bonneville Flood: Geological Society of America Paper 274, 81 p.
- Taue, Luis, Casey Luskin, Peter Selkin, Phillip Gans, and Andy Calvert, 2004, The results of the Snake River Flats Land Contribution to the time-averaged field global database: Geochemistry: Geosystems (G3), v. 5, no.8, Q08B11-10.1029/2003G000061.
- Williams, P.L., H.R. Covington, and V.M. Myrtton, 1991, Geologic map of the Snake River Flats, Idaho. U.S. Geological Survey Miscellaneous Investigations Series Map I-2146, scale 1:48,000.